

# Dmc1 (F-2): sc-374364

## BACKGROUND

DNA repair proteins are necessary for the maintenance of chromosome integrity and are involved in the elimination of premutagenic lesions from DNA. The DNA repair proteins Rad51 and Rad52 are key components of the double-strand-break repair (DSBR) pathway. Rad51 is essential for mitotic and meiotic recombination, and its mutation in yeast and mammalian cells results in chromosome loss. Overexpression of Rad52 confers resistance to ionizing radiation and induces homologous intrachromosomal recombination. Rad52 is thought to be involved in an early stage of Rad51-mediated recombination. Additional proteins involved in the pathway include Nibrin and Dmc1. Nibrin, which complexes with Mre11 and Rad50, is absent in Nijmegen breakage syndrome (NBS) patients. Dmc1 is specifically involved in meiotic recombination. An alternative spliced form of Dmc1, designated Dmc1-D, is deleted for a region between the two motifs involved in nucleotide binding. The alternatively spliced Dmc1-D transcript is detected in both male and female germ cells, indicating that the encoded protein may have a role in mammalian genetic recombination in meiosis.

## REFERENCES

1. Morita, T., et al. 1993. A mouse homolog of the *Escherichia coli* RecA and *Saccharomyces cerevisiae* Rad51 genes. *Proc. Natl. Acad. Sci. USA* 90: 6577-6580.
2. Muris, D.F., et al. 1994. Cloning of human and mouse genes homologous to Rad52, a yeast gene involved in DNA repair and recombination. *Mutat. Res.* 315: 295-305.
3. Park, M.S. 1995. Expression of human Rad52 confers resistance to ionizing radiation in mammalian cells. *J. Biol. Chem.* 270: 15467-15470.
4. Shen, Z., et al. 1996. Specific interactions between the human Rad51 and Rad52 proteins. *J. Biol. Chem.* 271: 148-152.
5. Lim, D.S. and Hasty, P. 1996. A mutation in mouse Rad51 results in an early embryonic lethal that is suppressed by a mutation in p53. *Mol. Cell. Biol.* 16: 7133-7143.
6. Boulukas, T. 1997. Nuclear import of DNA repair proteins. *Anticancer Res.* 17: 843-863.
7. Benson, F.E., et al. 1998. Synergistic actions of Rad51 and Rad52 in recombination and DNA repair. *Nature* 391: 401-404.
8. Yoshida, K., et al. 1998. The mouse RecA-like gene Dmc1 is required for homologous chromosome synapsis during meiosis. *Mol. Cell* 1: 707-718.

## CHROMOSOMAL LOCATION

Genetic locus: DMC1 (human) mapping to 22q13.1.

## SOURCE

Dmc1 (F-2) is a mouse monoclonal antibody raised against amino acids 1-100 of Dmc1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Dmc1 (F-2) is recommended for detection of Dmc1 of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Dmc1 (F-2) is also recommended for detection of Dmc1 in additional species, including canine and porcine.

Suitable for use as control antibody for Dmc1 siRNA (h): sc-37392, Dmc1 shRNA Plasmid (h): sc-37392-SH and Dmc1 shRNA (h) Lentiviral Particles: sc-37392-V.

Molecular Weight of Dmc1: 37 kDa.

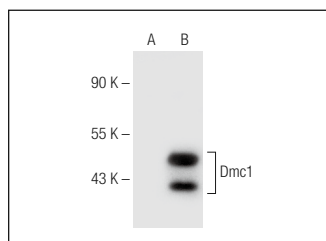
Molecular Weight of Dmc1-D: 31 kDa.

Positive Controls: human testis extract: sc-363781 or Dmc1 (h3): 293T Lysate: sc-128471.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



Dmc1 (F-2): sc-374364. Western blot analysis of Dmc1 expression in non-transfected: sc-117752 (A) and human Dmc1 transfected: sc-128471 (B) 293T whole cell lysates.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.